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For: Methods of Making Smooth Reinforced Cementitious Boards

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

TRANSMITTAL OF CORRECTED APPEAL BRIEF

Pursuant to 37 C.F.R. § 41.37, Applicant submits a corrected appeal brief to replace the original appeal brief timely filed on August 26, 2008. The corrected appeal brief is being electronically filed. The fee set forth in 41.20(b) (2) was paid previously.

The Commissioner is hereby authorized to charge any fees associated with this communication or credit any overpayment to Deposit Account No. 04-1679.

Respectfully Submitted,

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TABLE OF CONTENTS

PAGE

I. Real Party in Interest

The real party in interest is Saint-Gobain Technical Fabrics America, Inc. present owner of the application and the inventions described therein.

II. Related Appeals and Interferences

There are no related appeals or interferences.

III. Status of Claims

Claims On Appeal include Claims 17, 18, 21-28, 30-32, 34, 35 and 37.

Claims 1-16 (Canceled)

Claims 17-18 (Rejected)

Claims 19-20 (Withdrawn)

Claims 21-28 (Rejected)

Claim 29 (Allowed)

Claims 30-32 (Rejected)

Claim 33 (Allowed)

Claims 34-35 (Rejected)

Claim 36 (Allowed)

Claim 37 (Rejected)

IV. Status of Amendments

No amendment after final rejection was submitted.

V. Summary of Claimed Subject Matter

The following description refers to independent Claim 17.

In the Specification (Page 9, line 7) Reinforcement 18 is a composite fabric comprising a first component 20 and a second component 22. First component 20 may be a woven knit or a laid scrim open mesh material having mesh openings of a size suitable to permit interfacing between the skin and core cementitious matrix material 16 of board 10.

(Page 12, line 16) Second component 22 is a thin, porous nonwoven material, (Page 12, line 31) spunbonded or carded webs (Page 14, line 23) If desired, the nonwoven web second component 22 may be fabricated from loose fibers that are joined by a chemical binder.

(Page 13, line 4) The first and second components 20, 22 of composite fabric may be ...otherwise united with one another.

(page 4, 4-lines from the bottom)As noted hereinabove, the reinforcement provided in existing cementitious board is typically embedded just beneath each face of the boards.

(Page 5, line 2) It is the concrete material which is closest the board faces, i.e. the "skin" concrete, that is potentially subject to the greatest tensile forces.

(Page 8, line 18) Board 10 comprises cementitious material 16... which is reinforced near.. one or both opposed faces 12 and 14 by reinforcement 18. (Page 9, line 2) To optimize the tensile reinforcement capabilities of reinforcement 18 ... the central plane of the fabric18 should be imbedded to a depth "D" of about 1/32 to 1/16 inch from face(s) 12, 14.

(Page 13, line 28) [B]oth the first component 20 and the second component 22 are treated ... to enhance at least one of the wetting and adhesion characteristics thereof.

(Page 15, line 1) The comparatively open mesh first component 20 and nonwoven web second component 22, when united and embedded in a cementitious board promote penetration of cement slurry yet resist pin-holes or roughness which would mar the board faces 12, 14.

(Page 15, line 27) As an alternative to treating one or both of the first and second components 20, 22 of reinforcement substantially at their time of manufacture, such components may be treated to enhance their wetting and adhesion characteristics as an in-line step of the reinforcement board manufacturing process. ... In Fig. 2, reinforcement 18 may be sprayed or treated at a suitable treatment station 36 at which preferably both sides of the reinforcement are treated to enhance the wetting and/or adhesion characteristics thereof.

VI. Grounds of Rejection To Be Reviewed on Appeal

1. Whether claims 17-18, 22-23, 26-28, 30-32 and 34-35 are unpatentable under 35 U.S. C. 103(a) over Newman et al., US 6,054,205 in view of Mathieu, US 6,187,409; Galer, US 4,450,002; CA 2006149 (Canada); Murphy et al., US 6,176,920 and Palmer, US 6,001,935.

2. Whether claims 21 and 37 are unpatentable under 35 U.S. C. 103(a) over Newman et al., US 6,054,205 in view of Mathieu, US 6,187,409; Galer, US 4,450,002; CA 2006149 (Canada); Murphy et al., US 6,176,920 and Palmer, US 6,001,935 as applied above; and further in view of Cooper, US 6,254,817.

3. Whether claims 24-26 are unpatentable under 35 U.S. C. 103(a) over Newman et al., US 6,054,205 in view of Mathieu, US 6,187,409; Galer, US 4,450,002; CA 2006149 (Canada); Murphy et al., US 6,176,920 and Palmer, US 6,001,935 as applied above; and further in view of Schupack, US 4,617,219.

VII. Argument

A. The Rejection under 35 U.S. C. 103(a) over Newman et al., US 6,054,205 in view of Mathieu, US 6,187,409; Galer, US 4,450,002; CA 2006149 (Canada); Murphy et al., US 6,176,920 and Palmer, US 6,001,935.

B. Subheading: Claims 17-18, 22-23, 26-28, 30-32 and 34-35

The cement skin of the claimed invention is different from a board that is covered by paper or by a reinforcement fabric. The paper or fabric does not promote penetration of cement therethrough, and the surface of the board is the paper or fabric, and not a cement skin.

In the claimed invention, the recited open mesh and thin, porous nonwoven web differ from a single open mesh. A single open mesh has openings large enough to be completely penetrated by the hydraulic cementitious material and does not require a method step to promote penetration through both a mesh and a thin, porous nonwoven web and form a cement skin.

C. Discussion of the scope and content of the prior art, Newman et al.

Newman et al. teaches a glass fiber facing sheet 10 that includes a glass scrim 15 (an open mesh) and a melt blown fiber web 20.

Newman et al. (column 8, line 25) discloses, "Fig. 5 schematically illustrates the application of the melt blown polymer web 20 to the face 45 of the glass scrim 15 to form the glass fiber facing sheet 10."

Newman et al. (column 2, lines 13-14) states, "<u>glass fiber facing sheet provides a smooth surface that is essentially free of pitting</u>." [Underline emphasis added.]

Newman et al. (column 9, lines 57-61) states, "As a result, <u>the glass fiber facing sheet 10</u> becomes mechanically integrated into the cement board 12 once the cementitious slurry 76 or slurries harden <u>to thereby provide a generally uniform planar exterior surface on</u> the cement board 12." [Underline emphasis added.]

Newman et al. (column 10, lines 19-21) discloses, "As will be apparent from the foregoing, the glass fiber facing sheet 10 of the present invention provides a smooth cement board 12 which is essentially free of pitting." [Underline emphasis added.]

Claim 27 of Newman et al recites, "The cement board according to claim 22 wherein the melt blown fiber web provides a substantially smooth exterior surface to said cement board."

The Final Rejection mailed 04/16/2007 page 14, line 4, states, "The formation of a cement skin is consistent with the function of the melt blown web as described by Newman et al." But, Newman et al. expressly discloses, (column 9, lines 57-61) the glass fiber facing sheet 10 provides an exterior surface on the cement board 12, and claim 27 expressly discloses the melt blown fiber web [20] provides a substantially smooth exterior surface to said cement board. And Newman et al. expressly discloses (column 2, lines 13-14) the glass fiber facing sheet 10 provides a smooth surface essentially free of pitting (without mention of the slurry 76). It is not reasonable and consistent with the specification to interpret Appellant's claimed method of promoting penetration through and forming a cement skin, as encompassing the glass fiber facing sheet 10 that provides the exterior surface of the cement board 12 in Newman et al.

Moreover, the ordinary and plain meaning of the word "facing" in the term, glass fiber facing sheet 10, means "a cover."

The Final Rejection mailed 04/16/2007 states at page 14, line 11, states, "The formation of a cement skin is consistent with the absence of description in Newman et al. of the criticality of the individual fibers of the melt blown web to remain uncoated by cementitious slurry."

However, Newman et al. can not be relied upon as a prior art reference for an absence of a description.

Moreover, to interpret Newman et al. as disclosing a method of promoting penetration through a melt blown web 20 and forming a cement skin would contradict what Newman et al. expressly discloses: (column 9, lines 57-61) the glass fiber facing sheet 10 provides an exterior surface on the cement board 12, and (column 2, lines 13-14) the glass fiber facing sheet provides

a smooth surface essentially free of pitting (with no mention of the slurry 76) and (claim 27) the melt blown fiber web provides a substantially smooth exterior surface to said cement board.

The Final Rejection states at page 4, line 7, "When slurry 91 is not used, the cementitious slurry 76 is forced up through the mesh openings of the facing sheet and must extend at least partially through the melt blown web."

However, there is no express or inherent disclosure in Newman et al., that when slurry 91 is not used, the cementitious slurry 76 forms a cement skin, by promoting penetration through the melt blown web 20 and forming a cement skin.

Moreover, to form a cement skin with slurry 76, the slurry 76 must penetrate through the scrim 15 and web 20 (comprising the glass fiber facing sheet 10). There is no express or inherent disclosure of that in Newman et al. And such a disclosure would contradict the Newman et al. al. express disclosure: (column 9, lines 57-61) the glass fiber facing sheet 10 provides an exterior surface on the cement board 12, and claim 27 the melt blown fiber web [20] provides a substantially smooth exterior surface to said cement board, and (column 2, lines 13-14) the glass fiber facing sheet 10 provides a smooth surface essentially free of pitting. Further, there is no express or inherent disclosure in Newman et al. that when slurry 91 is not used, the cementitious slurry 76 forms a cement skin, despite in Newman et al. the manner in which Fig. 8 is drawn might suggest the scrim 15 and web 20 are below the surface of the cement board. However, Fig. 8 is drawn incorrectly when compared to the Newman et al. description (column 2, lines 13-14) and (column 9, line 57) and (column 10, lines 19-21) and claim 27, that the glass fiber facing sheet 10 [not slurry 76] provides a smooth exterior surface of a cement board. Moreover, Fig. 8 (column 4, line 33) is described as a cross section of Fig. 7, and Fig. 7 is drawn with a fibrous surface like the fibrous surface appearing in both Figs. 1 and 2. There should be a fibrous surface in Fig. 8.

Moreover, Fig. 8 embodies several discrepancies compared with the specification and with Figs. 1-3, which makes Fig. 8 less reasonable and consistent with a suggestion of a cement skin formed by slurry 76. In Fig. 8, the scrim 15 is clearly depicted on top of the web 20, such that the melt blown polymer web 20 is below the scrim 15, and is between the scrim 15 and the

slurry 76. Thereby, the web 20 prevents the scrim 15 from direct contact with the slurry 76, in contradiction to the specification (column 9, lines 35-39) requiring the "three dimensional grid profile surface 55 on the lower face 50 of the glass scrim 15 directly contacts the cementitious slurry(s)." Thus, Fig. 8 embodies a first discrepancy compared with the specification (column 9, lines 35-39).

A second discrepancy arises from Fig. 8 depicting the scrim 15 (in cross-section) as being one yarn, and the web 20 as one yarn, whereas Figs. 1, 2 and 3 correctly depict the scrim 15 as having two yarns 25 and 30, transverse to each other and in two layers, respectively. See the specification (yarn 25, column 4, line 58) and (yarn 30, column 4, line 59). Thus, Fig. 8 contains a discrepancy compared to Figs. 1-3 and compared to the specification (column 4, lines 58 and 59), for depicting the scrim 15 with one yarn, whereas two yarns 25 and 30 in two layers, respectively, are not depicted but should be, so as to be consistent with the specification (column 4, lines 58 and 59) and with Figs. 1-3.

A third discrepancy in Fig. 8 arises from Fig. 8 contradicting the Newman et al. specification (column 2, lines 13-14) and (column 9, line 57) and (column 10, lines 19-21) and claim 27, that the glass fiber facing sheet 10 provides an exterior surface of a cement board. There should be a fibrous surface in Fig. 8, like the fibrous surface shown in Fig. 7.

The discrepancies in Fig. 8 amount to an unreliable source for interpreting Fig. 8 as suggesting a cement skin formed by slurry 76 when slurry 91 is not used. By contrast, the specification (column 2, lines 13-14) and (column 9, line 57) and (column 10, lines 19-21) and claim 27, is a reliable source for teaching that the glass fiber facing sheet 10 [not slurry 76] provides a smooth exterior surface of a cement board. It would not be reasonable and consistent with the specification for Fig. 8 to suggest a cement skin formed by slurry 76, when the specification does not describe it.

Fig. 8 discloses another facing sheet (numeral 72). The specification (column 9, lines 6-11) states, "The first facing sheet 72 ... can be used as a facing material for the cement board 12." The manner in which Fig. 8 is drawn might suggest a cement skin covering the facing sheet 72

and formed by the slurry 76, however, which contradicts the Newman et al. al. express disclosure: (column 9, lines 57-61) that the glass fiber facing sheet 10 provides an exterior surface on the cement board 12, and claim 27 that the melt blown fiber web [20] provides a substantially smooth exterior surface to said cement board, and (column 2, lines 13-14) that the glass fiber facing sheet 10 provides a smooth surface essentially free of pitting, without mention of the slurry 76.

Moreover, Fig. 8 depicts the same discrepancies for the facing sheet 72 as the second discrepancy described above, in which the scrim 12 is not facing toward the cementitious material. Thereby, the web 20 prevents the scrim 15 from direct contact with the slurry, in contradiction to the specification (column 9, lines 35-39) requiring the "three dimensional grid profile surface 55 on the lower face 50 of the glass scrim 15 directly contacts the cementitious slurry(s)." Thus Fig. 8 is an unreliable source for suggesting a cement skin.

Moreover, it would not be reasonable and consistent with the specification of Newman et al. for Fig. 8 to suggest a cement skin formed by slurry 76 when slurry 91 is not used, when the specification does not describe it.

Newman et al. considered as a whole, does not disclose a cement skin, since as a whole, Newman et al. discloses: (column 9, lines 57-61) the glass fiber facing sheet 10 provides an exterior surface on the cement board 12, and (column 2, lines 13-14) the glass fiber facing sheet provides a smooth surface essentially free of pitting, with no mention of the slurry 76, and (claim 27) the melt blown fiber web provides a substantially smooth exterior surface to said cement board.

D. Discussion of the scope and content of the prior art, Mathieu, Murphy et al. and Galer

Mathieu discloses an individual mesh or scrim (column 16, lines 43-47) in which, [T]he openings ... are to be sufficiently large to permit passage of the bonding material such as portland cement slurry, i.e. such that a mesh or scrim is imbedded in a face or surface."

Murphy et al. discloses another example of an individual mesh, specifically a single bottom scrim 46 and a single top scrim 96. These scrims are layered between separate layers of cement that are successively applied layers: a layer 140 of cement, a bottom layer 147 of cement and iron slag aggregate and a top layer 146 of cement and iron slag aggregate. (Fig. 5 and column 9, line 34).

Galer teaches, at column 3, lines 3-16, "The reinforcing fibers may be in the form of a network such as a nonwoven mesh or scrim or a non-woven pervious fabric ... Non woven membranes must be sufficiently porous to permit penetration by the slurry."

However, the suggestion of imbedding the individual mesh or scrim or pervious fabric in Mathieu, Galer and Murphy et al. discloses no more than the same as in Newman et al. specifically describing cementitious material "forced up through the mesh openings 40" in only the glass scrim 15 (column 9, lines 43-46). Newman et al. does not disclose expressly or inherently the cementitious material forced up through the melt blown polymer web 20, especially in view of the Newman et al. al. express disclosure: (column 9, lines 57-61) that the glass fiber facing sheet 10 provides an exterior surface on the cement board 12, and claim 27 that the melt blown fiber web [20] provides a substantially smooth exterior surface to said cement board, and (column 2, lines 13-14) that the glass fiber facing sheet 10 provides a smooth surface essentially free of pitting, without mention of the slurry 76.

There are differences between (1.) the invention of making a cementitious board with an open mesh united with a thin, porous nonwoven web, as in Appellant's Claim 17, and (2.) the prior art of making the board with an individual mesh or single scrim, as in each of Mathieu, Murphy et al. and Galer. The individual mesh or scrim or pervious fabric in Mathieu, Murphy et al. and Galer has openings large enough to be penetrated through by hydraulic cementitious material. But the claimed invention, Claim 17, recites, promoting penetration through the thin, porous nonwoven web by a portion of the layer of hydraulic cementitious material to form the cement skin adjacent to the outer face by having the thin, porous nonwoven web comprise alkali resistant polymer fibers coated with a hydrophilic material.

Mathieu, Galer and Murphy et al. provide no reasonable expectation that the melt blown fiber web 20 of the facing sheet 10 of Newman et al. can be imbedded so as to contradict the Newman et al. al. express disclosure: (column 9, lines 57-61) that the glass fiber facing sheet 10 provides an exterior surface on the cement board 12, and claim 27 that the melt blown fiber web [20] provides a substantially smooth exterior surface to said cement board, and (column 2, lines 13-14) that the glass fiber facing sheet 10 provides a smooth surface essentially free of pitting, without mention of the slurry 76.

E. Additional discussion of the scope and content of the prior art, Mathieu

The Final Rejection states at page 6, line 11, "Mathieu, which is directed to the same type of cement board as Newman et al, provides ample suggestion to perform Newman's process of making a cement board such that the reinforcing sheet 10 is completely embedded in the cement beneath the surface ("cement skin") of the cement panel."

However, (at col. 2, line 59) Mathieu is directed to the type of cement board in U.S. Patent 4,504,533 (further considered by the Examiner 05/03/2007 as a reference furnished in an Information Disclosure Statement). The cement board of U.S. Patent 4,504,533 includes: (column 3, line 26) "The fiberglass mat 4 is more or less deeply embedded in the gypsum core. <u>The fiberglass non-woven layer 5 is an outer layer which prevents or hinders the passage of gypsum through it; the gypsum of the gypsum core may penetrate up to non-woven layer 5 or even slightly into it, however</u>." [Underline emphasis added.] Accordingly, the cement board of US 4,504,533 to which Mathieu is directed (at col. 2, line 59) teaches away from completely imbedding a mat 4 and non-woven layer 5 and forming a cement skin. Further, the cement board of US 4,504,533 to which Mathieu is directed (at col. 2, line 59) teaches away from promoting penetration of gypsum through the non-woven layer 5.

The Final Rejection states at page 4, line 7, "When slurry 91 is not used, the cementitious slurry 76 [Newman et al.] is forced up through the mesh openings of the facing sheet and must extend at least partially through the melt blown web." Newman et al. does not contain such a description. Instead, Newman et al. discloses: (column 9, lines 57-61) the glass fiber facing sheet 10 provides an exterior surface on the cement board 12, and (column 2, lines 13-14) the glass

fiber facing sheet provides a smooth surface essentially free of pitting (with no mention of the slurry 76) and (claim 27) the melt blown fiber web provides a substantially smooth exterior surface to said cement board.

Moreover, Newman et al. is consistent with US 4,504,533 that explains, "the non-woven layer 5 is an outer layer which prevents or hinders the passage of gypsum through it; the gypsum of the gypsum core may penetrate up to non-woven layer 5 or even slightly into it, however." Thus, Newman et al. and US 4,504,533 teach away from completely penetrating slurry through a melt blown web of Newman et al., or completely penetrating gypsum through a non-woven layer 5 of U.S. 4,504,533 and forming a cement skin.

And the patented invention of Mathieu discloses complete embedment of an individual mesh, which Mathieu distinguishes over the combination of a mat 4 and non-woven layer 5 of US 4,504,533, to which Mathieu is directed (at col. 2, line 59).

Thus, the contents of US 4,504,533 expressly teaches away from completely embedding the non-woven layer 5 thereof. And Mathieu's teaching to imbed an individual mesh or scrim (column 16, lines 43-47), avoids a suggestion to completely imbed both the mat 4 and non-woven layer 5 of US 4,504,533. Accordingly, the individual mesh or scrim of Mathieu provide no reasonable expectation of completely embedding both the glass scrim 15 and a melt blown polymer web 20 of Newman et al., which are described by Newman et al. in a manner consistent with the fiberglass mat 4 and non-woven layer 5 of US 4,504,533.

F. Additional discussion of the scope and content of the prior art, Galer

Galer discloses the method at column 5, lines 18-21 using a riser 25 (of a step 24) to cause a layer of concrete mix on a network (mesh) to form on a bottom side of the network.

The Final Rejection states, page 7, line 7, "This teaching of Galer to submerge a mesh just below the surface (form a "cement skin" covering the mesh) is highly relevant to Newman et al., since Newman desires a smooth cementitious board and teaches away from a cementitious board which has pitting/indentations."

However, Galer can not provide a suggestion/motivation to submerge the facing sheet 10 of Newman et al. to provide a smooth surface, since Newman et al. already forms a smooth surface essentially free from pitting by expressly stating, (column 2, lines 13-14) "glass fiber facing sheet provides a smooth surface that is essentially free of pitting." [underline emphasis added]

The use of a riser 25 (of a step 24) can not be properly regarded as Appellant's claimed method. It is not reasonable and consistent with Appellant's specification to interpret Appellant's claimed method as encompassing the method of using a riser 25 as disclosed in Galer.

G. Discussion of the scope and content of the prior art, Canada

Page 5, lines 1-9 of Canada states, "The process described herein is capable of producing concrete products, including panels in a relatively inexpensive manner and with reinforcing layers on their exterior surfaces. Because the reinforcing layers are substantially exposed and have not been damaged or contaminated with a delaminating material such as oil, decorative coatings such as paint can generally be applied to products produced by this process with relative ease."

Canada states, at page 11, lines 14-16, "Preferably the fabric also provides a suitable finished surface to the final product in order to enable a decorative or finish coat, such as paint, to be applied to it."

Page 9, lines 1-3 of Canada states, "The central core 12 is covered on both its major surfaces with surface-reinforcing layers 14 and 16 of a porous fabric or moisture-resistant paper integrally bonded to the central core layer on opposite sides thereof."

Canada discloses at page 17, lines 15-24, "Preferably the panel 10 is again coated with polymer 52 to form surface coatings 53 and 54. .... The additional coatings 53 and 54 on the exposed surfaces of the layers 14 and 16 [fabric layers 14 and 16]... enables a better bond between the fabric layer and a final decorative or protective coating such as paint." Underline emphasis added.

Page 5, lines 1-9 of Canada states, "The process described herein is capable of producing concrete products, including panels ... with reinforcing layers on their exterior surfaces. <u>Because the reinforcing layers are substantially exposed</u> ...decorative coatings such as paint can generally be applied... with relative ease."

The scope and content of Canada refer to a cementitious material, core 12, covered on both its major surfaces by porous fabric layers 14 and 16, that can be painted. Thus, Canada discloses a board having a paper or fabric surface.

There are differences between a board having a cement skin and a prior art board having a paper or fabric surface. The prior art reference Canada is an example of a board having a paper or reinforcing fabric surface to be painted or otherwise finished. (Canada, page 5, lines 4-9 and page 11, lines 12-15). It is not reasonable and consistent with the specification to interpret Appellant's claimed method of promoting penetration of hydraulic cementitious material and forming a cement skin, as encompassing the paper or fabric surface of Canada.

The Final Rejection of 04/16/2008 page 8, line 8, emphasizes by the following italicized text that Canada teaches *penetration* of the composition into the coated reinforcing layer 36. Additionally, Page 9, lines 3-4 of the Final Rejection emphasizes by underlined text a <u>wetting agent</u> disclosed by Canada.

Thus, the Final Rejection is pointing out that Canada teaches a wetting agent and penetration by cementitious material, while Applicant's remarks refer to penetration through, which is a subtle distinction. Accordingly, in Canada a cementitious composition does not <u>penetrate through</u> a porous fabric 14 <u>and form a cementitious skin</u>, even when the porous fabric 14 is treated with a polymer (<u>wetting agent</u>) such as the polymer of Canada.

In Canada, at page 5, lines 10-24, "According to one aspect of the present invention, a process for the manufacture of concrete products includes arranging a surface reinforcing layer of porous material... selected from the group consisting of fabric and moisture-resistant paper, ... and having an inner surface <u>coated with a polymer so the applied polymer penetrates the layer of material</u>. A ...cementitious composition is cast over the layer of material....This composition has

a consistency that enables it to partially, yet substantially penetrate the layer of material." Underline emphasis is added to indicate that the cementitious composition partially penetrates, which is not the same as to penetrate through the layer of material and form a cementitious skin.

Page 5, lines 10-24 of Canada discloses, "a cementitious composition partially, yet substantially penetrate the layer of material." Underline emphasis is added to indicate that the cementitious composition partially penetrates, but does not penetrate through the layer of material and form a cementitious skin.

Canada states at page 9, line 29- page 10, "In order to provide a secure and durable bond... the cementitious composition, the porous fabric, and the polymer material are selected and applied so as to permit and enable the cementitious composition partially and substantially to penetrate each of the surface-reinforcing layer in the manner illustrated in Figure 90." Underline emphasis is added to indicate that Canada's cementitious composition partially penetrates, which would exclude penetration through the layer of material and forming a cement skin.

Thus, Canada does not teach formation of a cement skin, since the cementitious material only partially penetrates, even when a polymer or wetting agent is used.

H. Discussion of the scope and content of the prior art reference, Palmer Jr. US 6,01,935.

The prior art reference Palmer Jr. US 6,001,935 (Palmer) discloses coating fabrics with hydrophilic compositions wherein the ability to transmit water through the fabric is desirable or wherein wicking away of moisture is desirable. (column 9, line 65- column 10, line 4) There is no teaching that such a fabric promotes penetration through and form a cement skin.

Penetration through of cementitious material and forming a cement skin, according to the claimed invention, is different from transmitting water through a fabric, as in Palmer. Undue experimentation would be required to determine whether the Palmer coating, disclosed as, to transmit water through a coated fabric or wicking away of moisture, would further be successful to promote penetration through of cementitious material and form a cement skin. Palmer

provides no reasonable expectation that the Palmer coated fabric to transmit water through fabric will promote penetration through of hydraulic cementitious material and form a cement skin.

The references provide no motivation to attempt the water passing coating of Palmer for the purpose of promoting penetration through of hydraulic cementitious material and form a cement skin. It is the Appellant's claimed invention that provides such a motivation, which should not be used in hindsight reconstruction of prior art.

In addition, Palmer (column 10, line 7) discloses that the (hydrophilic) compositions are also useful in applications to make a "fiber surface" more hydrophilic for better adhesion or easier incorporation into water-borne compositions such as cement mixtures or paper pulps. Accordingly, Palmer (column 10, line 7) refers to cement mixtures, also referred to by Berke et al. (US 5,753,368). Berke was cited in the Final Rejection mailed 05/03/07, and was replaced with Palmer in the non-final Office Action 11/16/2007. However, Berke and Palmer have similar teachings. And Berke describes the similar teachings with more detail than Palmer. The less detailed Palmer does not support the rejection any greater than the more specific Berke.

Similar to Palmer (column 10, line 7), Berke et al. discloses at column 2, lines 15-18, a method of "mixing ...to obtain a concrete mortar, or paste mix in which the individual fibers are homogeneously distributed; and casting the mix into a configuration." Applicant's claims pertain to a different problem, namely, how to promote penetration of a cementitious material through a thin, porous nonwoven web and form a cement skin. The homogeneously distributed fibers in a cement mixture of Palmer or a concrete mortar of Berke et al. can not be properly regarded as promoting penetration through the thin, porous non-woven web and form a cement skin of Claim 17. It is not reasonable and consistent with the specification to interpret Appellant's claim 17 as encompassing the cement mixture or concrete mortar with distributed fibers of Palmer and/or Berke et al.

I. The Rejection under 35 U.S. C. 103(a) over Newman et al., US 6,054,205 in view of Mathieu, US 6,187,409; Galer, US 4,450,002; CA 2006149 (Canada); Murphy et al., US 6,176,920 and Palmer, US 6,001,935 as applied above; and further in view of Cooper, US 6,254,817.

J. Subheading: Claims 21 and 37

Cooper (column 5, line 56) discloses, In all embodiments of the present invention, reinforcement 18 may be a woven knit, nonwoven or laid scrim open mesh fabric having mesh openings of a size suitable to permit interfacing between the skin and core cementitious material 16 of board 10. Thus, the mesh openings of Cooper are like that in Mathieu, Galer and Murphy et al., in that they disclose a single mesh or single scrim with openings large enough for cementitious material. Cooper does not supply the above discussed deficiencies of Mathieu, Galer, Canada, Murphy et al. and Palmer.

K. The Rejection under 35 U.S. C. 103(a) over Newman et al., US 6,054,205 in view of Mathieu, US 6,187,409; Galer, US 4,450,002; CA 2006149 (Canada); Murphy et al., US 6,176,920 and Palmer, US 6,001,935 as applied above; and further in view of Schupack, US 4,617,219.

L. Subheading: Claims 24-26

Schupack (column 4, line 65-column 5) discloses a nonwoven spatial fabric 12, 12', 23 and 25 and woven scrim fabric 16, and cementitious compositions permeating substantially completely throughout the interstices between the individual fibers of the non-woven fabric of considerable thickness without filtration that will give rise to water "lens" on the surface of the structure of inferior properties. According to the disclosed Example 1, and Example 2 referring to the same as in Example 1, A thin layer of cementitious composition was placed on the floor and the reinforcing material was placed on the layer. The remainder of the cementitious composition was then placed and screeded to facilitate penetration by the composition.

Thus, Schupack is like Murphy et al. in that both disclose scrims between separate layers of cement that are successively applied layers. Schupack does not supply the above discussed deficiencies of Mathieu, Galer, Canada, Murphy et al. and Palmer.

M. Conclusion

In view of the reasons supporting patentability of the rejected claims, Appellants respectfully request reversal of the Final Rejection of 04/16/2008.

VIII. Claims Appendix

17. A method of making a reinforced smooth cementitious board having a cement skin adjacent to an outer face, comprising:

(a) depositing a reinforcement fabric and a layer of hydraulic cementitious material, one on the other, wherein the reinforcement fabric comprises an open mesh united with a thin, porous nonwoven web;

(b) penetrating the open mesh with the layer of hydraulic cementitious material and imbedding the open mesh in the layer of hydraulic material;

(c) promoting penetration through the thin, porous nonwoven web by a portion of the layer of hydraulic cementitious material to form the cement skin adjacent to the outer face by having the thin, porous nonwoven web comprise alkali resistant polymer fibers coated with a hydrophilic material;

(d) penetrating through the thin, porous nonwoven web by said portion of the layer of hydraulic cementitious material to form the cement skin adjacent to the outer face and embed the thin, porous web in the layer of hydraulic cementitious material at a depth from the outer face; and

(e) curing the layer of hydraulic cementitious material to form a layer of hardened cementitious material imbedding the open mesh and the thin, porous nonwoven web at a depth from the outer face, wherein a portion of the layer of hardened cementitious material comprises the cement skin adjacent to the outer face.

18. The method of claim 17, wherein the layer of hydraulic cementitious material comprises a cementitious matrix material, further comprising:

penetrating the reinforcement fabric by the portion of the layer of hydraulic cementitious material, wherein the portion of the layer of hydraulic cementitious material comprises a portion of the cementitious matrix material.

21. The method of claim 17, further comprising:

forming the open mesh by wrapping glass fibers with fibers of an alkali resistant material, applying heat to fuse the fibers of the alkali resistant material and provide sheathed glass fibers sheathed by the alkali resistant material, and joining the sheathed glass fibers at intersection areas thereof within the open mesh; and

uniting the open mesh and the thin, porous nonwoven web to form the reinforcement fabric.

22. The method of claim 17, further comprising:

forming the reinforcement fabric by uniting the open mesh and the thin, porous nonwoven web, wherein the alkali resistant polymer fibers, having thereon the hydrophilic material, comprise polypropylene fibers having thereon the hydrophilic material.

23. The method of claim 17, further comprising:

forming the reinforcement fabric by uniting the open mesh and the thin, porous nonwoven web, wherein the alkali resistant polymer fibers, having thereon the hydrophilic material, comprise, a polymer or copolymer of, olefin, ethylene, butylene, vinyl, styrene or butadiene, having thereon the hydrophilic material, having thereon the hydrophilic material.

24. The method of claim 17, further comprising:

forming the nonwoven web as either a spun bonded web of the fibers having the hydrophilic material thereon or a carded web of the fibers having the hydrophilic material thereon; and

uniting the nonwoven web and the open mesh to comprise the reinforcement fabric.

25. The method of claim 17, further comprising:

forming the nonwoven web as either a spun bonded web of the fibers or a carded web of the fibers;

forming the open mesh by encapsulating glass fibers with an alkali resistant material to provide encapsulated glass fibers, and joining the encapsulated glass fibers at intersection areas thereof within the open mesh; and

uniting the open mesh and the nonwoven web to comprise the reinforcement fabric.

26. The method of claim 17, further comprising:

uniting the open mesh and the nonwoven web by heat fusing them together.

27. The method of claim 17, further comprising:

uniting the open mesh and the thin, porous nonwoven web by adhesive or stitching.

28. The method of claim 17, further comprising:

prior to depositing the reinforcement fabric and the layer of hydraulic cementitious material one on the other, coating one or more of, surfactants, hydrophilic compounds, foam boosters/stabilizers and polar polymer topical solutions on the open mesh and on the thin, porous nonwoven web that comprises the alkali resistant polymer fibers having thereon the hydrophilic material.

30. The method of claim 17, further comprising depositing the layer of hydraulic cementitious material onto the reinforcement fabric thereby depositing one on the other; and

compacting the layer of hydraulic cementitious material and the reinforcement fabric.

31. The method of claim 30, further comprising:

forming the reinforcement fabric by uniting the open mesh and the thin, porous nonwoven web, wherein the alkali resistant polymer fibers, having thereon the hydrophilic material, comprise polypropylene fibers having thereon the hydrophilic material.

32. The method of claim 30, further comprising:

prior to depositing the layer of hydraulic cementitious material onto the reinforcement fabric, coating one or more of, surfactants, hydrophilic compounds, foam boosters/stabilizers and polar polymer topical solutions on the open mesh and on the thin, porous nonwoven web that comprises the alkali resistant polymer fibers having thereon the hydrophilic material.

34. The method of claim 17, further comprising:

depositing the reinforcement fabric onto the layer of hydraulic cementitious material thereby depositing one on the other; and

compacting the reinforcement fabric and the layer of hydraulic cementitious material.

35. The method of claim 34, further comprising:

prior to depositing the reinforcement fabric onto the layer of hydraulic cementitious material, coating one or more of, surfactants, hydrophilic compounds, foam boosters/stabilizers and polar polymer topical solutions on the open mesh and on the thin, porous nonwoven web that comprises the alkali resistant polymer fibers having thereon the hydrophilic material.

37. The method of claim 17, further comprising:

forming the open mesh, either by coextruding an alkali resistant material with glass fibers to provide sheathed glass fibers sheathed by the alkali resistant material, or by wrapping glass fibers with fibers of an alkali resistant material and applying heat to fuse the fibers of the alkali

resistant material to provide sheathed glass fibers sheathed by the alkali resistant material, and joining the sheathed glass fibers at intersection areas thereof within the open mesh; and

uniting the open mesh and the nonwoven web to comprise the reinforcement fabric.

IX. Evidence Appendix

None

X. Related Proceedings Appendix

None